Complete Summary

GUIDELINE TITLE

Diagnostic laparoscopy in the ICU. In: Diagnostic laparoscopy guidelines.

BIBLIOGRAPHIC SOURCE(S)

Diagnostic laparoscopy in the ICU. In: Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). Diagnostic laparoscopy guidelines. Los Angeles (CA): Society of American Gastrointestinal and Endoscopic Surgeons (SAGES); 2007 Nov. p. 4-10.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). SAGES guidelines for diagnostic laparoscopy. Los Angeles (CA): Society of American Gastrointestinal and Endoscopic Surgeons (SAGES); 2002 Mar. 5 p.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Intra-abdominal pathology, including:

- Unexplained sepsis
- Systemic inflammatory response syndrome
- Multisystem organ failure
- Unexplained metabolic acidosis

- Abdominal pain associated with signs of sepsis without an obvious indication for laparotomy
- Increased abdominal distention that is not a consequence of bowel obstruction

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Critical Care
Gastroenterology
Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To assist surgeons' decisions about the appropriate use of diagnostic laparoscopy (DL) in intensive care unit (ICU) patients
- To update the previous 2002 guidelines on this topic

TARGET POPULATION

Patients in the intensive care unit (ICU) with a suspected intra-abdominal catastrophe that cannot be ruled out by noninvasive means and would otherwise require an exploratory laparotomy

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnostic laparoscopy in appropriately selected, critically ill patients in an intensive care unit

MAJOR OUTCOMES CONSIDERED

- Conversion to open procedure rate
- Procedure-related/intraoperative complications
- Procedure-related morbidity
- Mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A systematic literature search of MEDLINE for the period 1995-2005 was limited to English language articles. The search strategy is shown in Figure 1 in the original guideline document. Using the same strategy, the Cochrane database of evidence-based reviews and the Database of Abstracts of Reviews of Effects (DARE) were searched.

Abstracts were reviewed by three committee members and into the following categories:

- Randomized studies, meta-analyses, and systematic reviews
- Prospective studies
- Retrospective studies
- Case reports
- Review articles

Randomized controlled trials, meta-analyses, and systematic reviews were selected for further review along with prospective and retrospective studies that included at least 50 patients; studies with smaller samples were reviewed when other available evidence was lacking. The most recent reviews were also included. All case reports, old reviews, and smaller studies were excluded.

The reviewers graded the level of evidence of each article and manually searched the bibliographies for additional articles that may have been missed by the search. Any additional relevant articles were included in the review and grading.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I	Evidence from properly conducted randomized, controlled trials
Level II	Evidence from controlled trials without randomization Or Cohort of case-control studies Or Multiple time series, dramatic uncontrolled experiments

Level III	Descriptive case series, opinions of expert panels

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

To maximize the efficiency of the review, articles were divided into three subject categories:

- Staging laparoscopy for cancer
- Diagnostic laparoscopy for acute conditions
- Diagnostic laparoscopy for chronic conditions

Reviewers graded the level of each article (see "Rating Scheme for the Strength of the Evidence.")

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guidelines were developed under the auspices of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) and revised by the SAGES Guidelines Committee.

The statements included in this guideline are the product of a systematic review of published work on the topic, and the recommendations are explicitly linked to the supporting evidence. The strengths and weaknesses of the available evidence are described and expert opinion sought where the evidence is lacking. This is an update of previous guidelines on this topic (last revision 2002) as new information has accumulated.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Scale Used for Recommendation Grading

Grade A	Based on high-level (level I or II), well-performed studies with uniform interpretation and conclusions by the expert panel
Grade B	Based on high-level, well-performed studies with varying interpretation and conclusions by the expert panel
Grade C	Based on lower-level evidence (level II or less) with inconsistent findings and/or varying interpretations or conclusions by the expert panel

COST ANALYSIS

While it has been implied that diagnostic laparoscopy (DL) in the intensive care unit (ICU) rather than the operating room can yield substantial cost savings, no direct evidence exists.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The recommendations of each guideline undergo multidisciplinary review and are considered valid at the time of production based on the data available. This statement was reviewed by the Board of Governors of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), November 2007.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions of the levels of evidence (**I, II, III**) and grades of the recommendations (**A, B, C**) are provided at the end of the "Major Recommendations" field.

General Recommendations for Diagnostic Laparoscopy (DL)

Diagnostic laparoscopy is a safe and well tolerated procedure that can be performed in an inpatient or outpatient setting under general or occasionally local anesthesia with intravenous sedation in carefully selected patients. Diagnostic laparoscopy should be performed by physicians trained in laparoscopic techniques who can recognize and treat common complications and can perform additional therapeutic procedures when indicated. During the procedure, the patient should be continuously monitored, and resuscitation capability must be immediately available. Laparoscopy must be performed using sterile technique along with meticulous disinfection of the laparoscopic equipment.

DL in the Intensive Care Unit (ICU)

Technique

Many studies have documented the feasibility of the procedure (**Levels II, III**). The most common reason that the procedure fails is the presence of severe adhesions. Although in the initial reports on DL for ICU patients the procedure was performed in the operating room, most recent studies have applied the procedure exclusively at the bedside. Local anesthesia, sedation, and occasionally paralytics have been used for the procedure at the bedside. Many patients who are breathing spontaneously require intubation before the procedure; however, the procedure has also been applied successfully in nonintubated patients. In most instances, a portable laparoscopic cart, which contains a monitor, video camera, light source, and gas supply, is used. A cut-down technique and the Veress needle technique have been used for initial access without reported untoward events. The periumbilical region is the most used site for initial access; however, concerns

about intra-abdominal adhesions may dictate the use of another "virgin" site. Pneumoperitoneum has been kept at lower levels (8-12 mm Hg) by many authors due to concerns of hemodynamic compromise in already compromised patients. Nevertheless, level III evidence exists that 15 mm Hg can be used safely without significant hemodynamic or respiratory compromise with the exception of a well tolerated increase in peak inspiratory pressure. No studies have compared different insufflation pressures in ICU patients. Although most studies have used CO_2 for insufflation, the use of N_2O has also been described. An angled scope is used at the periumbilical trocar site for inspection of the intra-abdominal organs, including the surface of the liver, gallbladder, stomach, intestine, pelvic organs, and visible retroperitoneal surfaces along with examination of free intraperitoneal fluid. Additional (5-mm) trocars are used at the discretion of the surgeon as needed for exposure and for potential therapeutic intervention. The use of laparoscopic ultrasound has not been described in ICU patients. The duration of the procedure is short, ranging between 10 and 70 minutes, with an average duration of about 30 minutes.

Indications

The main indication for DL in the ICU has been unexplained sepsis, systemic inflammatory response syndrome, and multisystem organ failure. In addition, the procedure has been used for abdominal pain or tenderness associated with other signs of sepsis without an obvious indication for laparotomy (i.e., pneumoperitoneum, massive gastrointestinal bleeding, small bowel obstruction), fever and/or leukocytosis in an obtunded or sedated patient not explained by another identifiable problem (such as pneumonia, line sepsis, or urinary sepsis), metabolic acidosis not explained by another process (such as cardiogenic shock), and increased abdominal distention that is not a consequence of bowel obstruction.

Recommendations

Diagnostic laparoscopy is technically feasible and can be applied safely in appropriated selected ICU patients (**Grade B**). The procedure should be used in critically ill patients when an intra-abdominal catastrophe is suspected but cannot be ruled out by noninvasive means and would otherwise require an exploratory laparotomy (**Grade C**). It should be given strong consideration in ICU patients with suspected acalculous cholecystitis or ischemic bowel, as its accuracy likely exceeds that of noninvasive studies (**Grade C**). On the other hand, it should be kept in mind that the procedure is unlikely to identify retroperitoneal processes. The decision to undertake DL and at which location (bedside or operating room) should be individualized and should be based on the available resources and laparoscopic expertise of the surgeon.

For details of the rationale for the procedure and its diagnostic accuracy, see the original guideline document.

Definitions:

Levels of Evidence

Level I	Evidence from properly conducted randomized, controlled trials
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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Expeditious diagnosis of suspected intra-abdominal pathology
- Minimization of treatment interruption by not moving the patient outside the ICU
- Avoid the morbidity of open exploration
- Avoid potential risks associated with transportation to the operating room or radiology for diagnostic tests
- Ability to provide therapeutic intervention

POTENTIAL HARMS

- Delay in the diagnosis and treatment of patients if the procedure is false negative
- Missed pathology and its associated complications
- Procedure- and anesthesia-related complications (see "Procedure-related Complications and Patient Outcomes" section in the original guideline document)

CONTRAINDICATIONS

CONTRAINDICATIONS

- Patients unable to tolerate pneumoperitoneum or who are so sick that there is no realistic chance of survival even if a "treatable" intra-abdominal process were found
- Patients with an obvious indication for surgical intervention such as a bowel obstruction or perforated viscus
- Patients with an uncorrectable coagulopathy or uncorrectable hypercapnia >50 torr
- Patients with a tense and distended abdomen (i.e., clinically suspected abdominal compartment syndrome)
- Patients with abdominal wall infection (e.g., cellulitis, soft tissue infection, open wounds)
- Patients with extensive previous abdominal surgery with multiple incisional scars or after a laparotomy within the last 30 days

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Clinical practice guidelines are intended to indicate the best available approach to medical conditions as established by systematic review of available data and expert opinion. The approach suggested may not be the only acceptable approach given the complexity of the health care environment. These guidelines are intended to be flexible, as the surgeon must always choose the approach best suited to the patient and variables in existence at the time of the decision.

Limitations of the Available Literature

A few single-center studies of limited quality, which include small patient cohorts, address the role of diagnostic laparoscopy in the intensive care unit population making generalizations difficult and allowing institutional and personal biases to be introduced into the results. There is also a lack of uniformity and detail in the reported selection criteria and noninvasive imaging prior to the procedure. These limitations of the available literature and the high mortality rates of this patient population make it difficult to draw firm conclusions about the impact of the procedure on patient outcomes and its cost-effectiveness. Furthermore, the impact of the surgeon's laparoscopic expertise on the diagnostic accuracy of the procedure is unknown.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Foreign Language Translations
Patient Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1998 Apr (revised 2007 Nov)

GUIDELINE DEVELOPER(S)

Society of American Gastrointestinal and Endoscopic Surgeons - Medical Specialty Society

SOURCE(S) OF FUNDING

Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)

GUIDELINE COMMITTEE

Guidelines Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Members of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) disclose potential conflicts of interest and pertinent financial relationships prior to serving as faculty for SAGES-sponsored educational events, delivering presentations at scientific meetings, etc. Additionally, members of SAGES Committees disclose their potential conflicts of interest and pertinent financial relationships annually as a condition of committee membership.

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GUIDELINE AVAILABILITY

Electronic copies: Available from the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Web site.

Print copies: Available from the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), 11300 W. Olympic Blvd., Suite 600, Los Angeles, CA 90064; Web site: www.sages.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

The following is available:

- Patient information for diagnostic laparoscopy from SAGES. Available in English and Polish from the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

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